DOCUMENT RESUME

ED 301 578 TM 012 438

AUTHOR Marsh, Herbert W.
TITLE Extracurricular Activities: A Beneficial Extension of the Traditional Curriculum or a Subversion of Academic Goals.
PUB DATE 7 Sep 88
NOTE 41p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Aspiration; *Extracurricular Activities; Grade 10; Grade 12; *High School Graduates; High Schools; *National Surveys; Outcomes of Education; Postsecondary Education; *Student Participation
IDENTIFIERS *High School and Beyond (NCES)

ABSTRACT

As part of the High School and Beyond study, students in a large nationally-representative sample were asked whether or not they had participated in each of a variety of extracurricular activities in their sophomore year (1980) and again in their senior year (1982) of high school. Data for 1984--2 years after the subjects graduated from high school--were included. Out of 10,613 students, a sample size of 4,000 was assumed for the purposes of statistical testing. After controlling background variables and sophomore outcomes, total participation was significantly and favorably related to 17 of 22 senior and postsecondary outcomes (e.g., social and academic self-concept, educational aspirations, coursework selection, homework, absenteeism, academic achievement, and subsequent college attendance). However, there were significant non-linear components to most relations indicating that participation in too many activities produced diminishing returns. The benefits of participation also differed substantially depending on the particular activity. Participation in sport, honor societies, student government, school publications, school subject-matter clubs, church organizations, and community service organizations was consistently beneficial, but participation in some activities had mixed or predominantly negative effects. A 39-item list of references and eight data tables are included. (Author/TJH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED301578

Extracurricular Activities: A Beneficial Extension of the Traditional Curriculum or A Subversion of Academic Goals

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Herbert W. Marsh
University of Sydney
7 September, 1988

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
HERBERT W. MARSH
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Running Head: Extracurricular Activities

The data used in this paper were made available by the Inter-university Consortium for Political and Social Research. I would like to thank Raymond Debus, Raymond King, Michael Bailey, and Rosalie Robinson for helpful comments on earlier drafts of this manuscript.

TM 012 438

BEST COPY AVAILABLE

Extracurricular Activities: A Beneficial Extension of the Traditional Curriculum or A Subversion of Academic Goals

ABSTRACT

As part of the High School and Beyond (HSB) study, a large nationally representative sample of students were asked whether or not they had participated in each of a variety of extracurricular activities in their sophomore and again in their senior year of high school. After controlling background variables and sophomore outcomes, total participation was significantly and favorably related to 17 of 22 senior and post-secondary outcomes (e.g., social and academic self-concept, educational aspirations, coursework selection, homework, absenteeism, academic achievement and subsequent college attendance). There were, however, significant nonlinear components to most relations indicating that participation in too many activities produced diminishing returns. The benefits of participation also differed substantially depending on the particular activity. Participation in sport, honor societies, student government, school publications, school subject-matter clubs, church organizations, and community service organizations was consistently beneficial but participation in some activities had mixed or predominantly negative effects.

Extracurricular Activities: A Beneficial Extension of the Curriculum or A Subversion of Traditional Academic Goals

The purpose of the present investigation is to relate participation in extracurricular activities to changes in academic achievement, attitudes, and behaviors during the last two years of high school and to subsequent college attendance and other post-secondary outcomes. The study is based on the large, nationally representative, longitudinal High School and Beyond (HSB) data.

Previous Research

Otto (1982) and Holland and Andre (1987, 1988; also see Brown, 1988; Taylor & Chiogioji, 1988) have recently reviewed the voluminous literature relating participation in extracurricular activities to a multitude of outcomes. This research can be organized in terms of the theoretical basis, the type of the extracurricular activity, the outcome variables related to participation, the methodological design and, perhaps, the adequacy of the study.

Much of the research in this field has an empirical, atheoretical orientation (see Brown, 1988). Many of the theoretical bases that have been proposed are derived from, or are in reaction to, Coleman's (1959, 1961) seminal work. Adolescent society, according to a perhaps over-simplified interpretation of Coleman, emphasizes peer acceptance and an irresponsible, hedonistic, indifferent approach to academic achievement and knowledge transmission. Holland and Andre (1987), for example, interpreted Coleman's position to mean that an emphasis on extracurricular activities subverted the more traditional academic goals of education. They proposed an alternative developmental perspective in which extracurricular activities are viewed as "experiences that further the total development of the individual students" (Holland & Andre, 1987). From this developmental perspective, extracurricular activities facilitate nonacademic goals but may also facilitate the more narrowly defined goals of the academic perspective. Participation in extracurricular activities may, for example, enhance perceived social status which in turn influences educational aspirations and concomitant behaviors (Spady, 1970, 1971). Depending on one's theoretical perspective, participation in extracurricular activities may be posited to: (a) divert attention from academic pursuits as evidenced by its negative effects on narrowly defined academic goals, (b) have little or no effect on academic outcomes but contribute to desirable nonacademic outcomes, or (c) have positive effects on nonacademic outcomes and

facilitate academic growth -- perhaps indirectly -- as well.

Participation in extracurricular activities is necessarily defined by self-selection and so it is difficult to separate true effects from pre-existing differences in students who participate in the activities. The experimental designs used most frequently are: (a) one-wave designs that merely correlate participation levels with outcome variables with no control variables, (b) one-wave designs in which participation-outcome relations are controlled for background variables such as socioeconomic status (SES), and (c) longitudinal, multi-wave designs that relate changes in outcome variables to participation after controlling background variables. Because the goal of most research -- at least ultimately -- is to infer the consequences of participation in extracurricular activities, there is little justification for single-wave designs even though this type of study predominates.

The reviews by Otto (1982) and by Holland and Andre (1987) were severely hampered by serious methodological problems in existing research. Specific problems relevant to this study noted by Holland and Andre and by others were: (a) Much of the research is based on small-scale samples of convenience that may have limited generality. (b) Participation in extracurricular activities is by necessity defined by self-selection so that it is impossible to determine whether participation is "cause" or "effect" in a single wave of data. (c) The differential effects of participating in specific extra-curricular activities -- with the notable exception of sport -- have been largely ignored. (d) Previous research is based largely on white, male, high school senior athletes and variously defined comparison groups. There has been insufficient attention to the generality of effects across different subgroups.

Researchers have not typically given serious attention to the classification of extracurricular activities other than sport. As noted by Brown (1988, p. 110) the two broad categories of extracurricular activity in existing research have been "sports and 'everything else'." Hanks and Eckland (1976) cited an unreported factor analysis as their basis for collapsing 8 activties into two categories -- sport and social participation (e.g., publications, debate, drama, student government, music, service clubs, academic groups, religious groups). In an alternative approach, Synder and Spreitzer (1977) considered sport and one additional, more narrowly defined activity -- serious involvement in music. Spady (1970) initially considered sports and a service-leadership category but subsequently expanded the list to include social clubs and performing arts (music, art, drama, and

publications) in his 1971 study. Grabe (1976, 1981) included five categories: athletics, academics, fine arts, clubs, and social life. Other researchers (e.g., Lindsay, 1984; Otto, 1975; 1976) have collapsed participation in all extracurricular activities into a single score. Synder (1969) derived a single activities score based on the extent of a students' involvement and the activity's prestige.

Researchers typically emphasize the supposed consequences rather than the antecedents of participation in extracurricular activity. Whereas many researchers have used regression-type analyses to control background variables (e.g., SES, IQ), the intent is usually to equate groups rather than to test antecedents of participation. A notable exception, however, is the negative relation between school size and participation rates (Baird, 1969; Barker & Gump, 1964; Grabe, 1976; Wicker, 1968; see Holland & Andre, 1987, for a summary). Smaller schools have a larger number of activities relative to the number of students and so more students are able to participate in more activities. This negative relation between school size and participation rates in one of the most robust findings in this field.

The array of outcomes -- possible consequences -- that have been related to extracurricular participation is extensive. The most frequently considered, however, are academic achievement, educational and occupational aspirations (or attainments), and a variety of personal-social characteristics (e.g., general and academic self-concept, social status, and delinquency). Some researchers have also posited personal-social outcomes to mediate the influence of participation on subsequent behavior (e.g., participation enhances self-concept which increases educational aspirations).

Academic Achievement.

Otto (1982, p. 218) concluded that there "is no evidence -- only anecdotes and testimonials -- that the amount of participation in extracurricular activities affects academic performance, whether favorably or unfavorably." Noting that slightly higher grade point averages (GPA) may be associated with athletic participation, Otto suggested that the higher grades may be a pre-existing difference, that athletes may take easier courses, and that eligibility requirements preclude those with low marks from participating. Andre and Holland (1987) also noted that correlations between athletic participation and GPA were generally reduced substantially when background characteristics were controlled. Two studies (Hanks & Eckland, 1976; Hauser & Lueptow, 1978) that appear to more methodologically adequate than most are considered in greater detail.

Based on school records from five high schools, Hauser and Lueptow (1978) obtained information on IQ and sports participation and on GPA in sophomore, junior and senior years. Although data were collected at only one time, this is in effect a longitudinal design. Athletes had higher GPAs in all three years, but did not differ from nonparticipants in their senior year after controlling for their initially higher GPAs. Thus, changes in GPAs over the three years were unrelated to participation. Controlling just IQ, however, did not completely eliminate the positive relation between participation and GPA. The authors interpreted their results to indicate that correlations between participation and GPA were due to pre-existing differences.

Hanks and Eckland (1976) considered a national sample of students initially tested in 1955 when they were high school sophomores and followed up 15 years later. The study has the important limitation that senior year variables -- including extracurricular activities -- were retrospective reports 12 years after high school graduation. For both boys and girls, sporting involvement was very weakly correlated to sophomore and senior GPAs but was not significantly related to senior GPA after controlling for sophomore variables. A general category of other extracurricular activities, however, was significantly related to both sophomore and senior GPAs. In their path analysis, participation was still significantly related to senior GPA even after controlling for SES, academic track, sophomore GPA, sophomore standardized achievement scores, and other sophomore variables. These results provide what appear to be the most convincing evidence that extra-curricular activities other than sports are positively related to changes in high school GPA. The interpretations must be tempered, however, by the fact that both senior GPA and extracurricular activities were retrospective reports.

Educational and Occupational Aspirations and Attainments.

Educational aspirations. Otto (1982) concluded that there was convincing evidence that participation in extracurricular activities is positively associated with educational aspirations even after controlling for variables such as academic performance and SES. Positive relations were shown for both sports participation and other extracurricular activities and apparently generalize across sex and ethnicity. Studies reviewed by Holland and Andre (1988) were generally consistent with Otto's conclusions. Holland and Andre also noted some studies in which the benefits of participation were larger for students from lower-SES backgrounds.

Despite the generally consistent pattern of relations found between participation in extracurricular activities and educational aspirations, an

important caution must be noted. Studies of this relation are typically not longitudinal in that educational aspirations and extracurricular participation were both measured in the senior year of high school. This leaves ambiguous the ordering of these variables so that it is possible that initially higher educational aspirations lead to greater participation. Hanks and Eckland (1976), for example, found that sophomore educational aspirations were significantly correlated with subsequent participation in extracurricular activities even after controlling SES, standardized test scores, sophomore grades, and academic track. More convincing evidence would be that changes in educational aspirations during high school are positively correlated with extracurricular participation. This sort of evidence requires longitudinal studies that assess educational aspirations at the beginning and end of high school.

Educational and occupational attainment. Otto (1982) concluded that studies of the effects of extracurricular activities on latter life achievements were limited and provided equivocal results. At least for educational attainment, however, these conclusions appear to be overly pessimistic. Holland and Andre (1987), for example, concluded that "some research, using causal modeling techniques, has indicated that, in males, participation does have relationships with the outcome variable of educational attainment that are independent of obvious moderator variables" (p. 447). Four apparently methodologically sound studies (Hanks & Eckland, 1976; Howell, Miracle and Rees, 1984; Otto & Alwin, 1977; Spady, 1970) will be considered in greater detail.

Both Hanks and Eckland (1976 -- see earlier description) and Otto (1975; 1976; Otto & Alwin, 1977; also see Otto, 1982) used similar designs in that educational attainment was measured in a long-term followup of subjects who had previously been surveyed while in high school. In the Otto study, the initial survey was conducted during the senior year of high school. In summarizing his own research, Otto (1982) noted that extracurricular activity had a positive effect on education, occupation and income 15 years after high school even after controlling SES, measured intelligence, academic performance, educational and occupational aspirations, and personal adjustment measured in the senior year of high school. Hanks and Eckland found that participation in extracurricular activities other than sport was positively related to educational attainment after controlling SES, standardized test scores, school grades and educational aspirations. Using similar controls, sport participation was not significantly related to

educational attainment.

The Howell et al. (1984) research is potentially the strongest study considered here. Data came from the Youth in Transition study that had five waves of data from a national sample of boys starting when they were sophomores in high school and ending five years after high school graduation. Howell et al. found that sport participation was significantly related to educational attainment after controlling race, SES, IQ, and GPA. Further analyses indicated that this effect was largely mediated by educational and occupational aspirations. Unfortunately, however, Howell et al. did not control earlier educational aspirations even though this variable was available. Thus, it is possible that educational aspirations at the start of high school affected both sport participation and educational aspirations in the senior year. Of surprize was the finding that the positive effects of sporting participation were not associated with football, basketball or baseball, but were due to participation in "other" sports.

The Spady (1970, 1971) studies are perhaps the most controversial of the studies considered here. Spady asked boys from two high schools to provide data during their senior year in high school and again four years later. In the 1970 study participation in sports and other activities were related to educational aspirations and attainment. Students who participated in both sports and other activities had higher educational aspirations and subsequent attainments, thus supporting the positive benefits of extracurricular activities. The controversial finding was that students who participated in athletics only and had high educational aspirations were less likely to satisfy their goals, particularly if their self-perceived status was higher than their actual status as judged by their peers. Because of the theoretical orientation of his research, Spady's critical variable was the difference between educational aspirations and actual attainment. Spady did not conclude that participation in sports had a negative effect on educational attainment and his published results suggest the opposite conclusion. Instead, his major conclusion was that participation in sport created high educational aspirations that might not be fulfilled if a student was initially disadvantaged and did not participate in other activities.

In his 1971 study, Spady expanded the categories of extracurricular activities to include leadership, sports, social, performing arts, and none. His major dependent variables were educational aspirations, attending more than one year of college, and the difference between aspirations and attainment. Although results differed somewhat depending on the particular

outcome, all extracurricular activities were associated with more positive outcomes than no activities and leadership activities were associated with with more positive benefits than the other activities.

Personal-Social Characteristics

Personal-social characteristics is a catch-all category of outcomes considered by Holland and Andre (1987) as is the corresponding "other outcomes" category in Otto's 1982 review. Summarizing some of his own research, Otto (1982) suggested that participation in extracurricular activities is related to improved personal adjustment, socializing patterns, and social integration, and to less self-estrangement and powerlessness.

Holland and Andre (1987) noted a number of studies in which participation in extracurricular activity was associated with higher self-concept, though the nature of the relation varied depending on sex and the type of activity. The problem with interpretations of these findings is that there was typically no basis for determining whether participation affects these personal-social characteristics or is merely correlated with them. Holland and Andre, for example, reported that Schendel (1965) found that athletes were more dominant then nonathletes at both 9th and 12th grades, but that nonathletes actually showed more growth in dominance over this period. Whereas most research considering self-concept has considered only general self-concept, there is a growing recognition of the importance of considering a multifaceted self-concept. Marsh and Shavelson (1985), for example, concluded that self-concept cannot be adequately understood if this multidimensionality is ignored. They report that specifically relevant dimensions of self-concept are typically more highly correlated with criterion variables than are general measures of self. In relation to participation in extracurricular activities, particularly relevant dimensions are academic self-concept and social self-concept (which is similar to the self-perceived social status or popularity emphasized in other research).

Some studies also suggest that participation in sports is associated with lower levels of delinquency after controlling for variables such as SES and academic performance (e.g., Schafer, 1969; Landers and Landers, 1978). The Landers and Landers study in particular, however, has been severely critiqued (e.g., Peek, Picou, Alton, & Curry, 1979). Otto (1982, p. 224) concludes that "the notion that participation in athletics acts as a deterrent to delinquency is suspect."

A frequent implicit or explicit assumption is that distal benefits of extracurricular activities are mediated by personal-social variables. Spady

(1970), for example, posited that participation in sport increased perceived social status and that this leads to higher educational aspirations. Spady (1971, p. 396) goes on to suggest that extracurricular activities "not only provide participants with varying degrees of status and prestige, they also facilitate the development of skills and attitudes that serve as resources in students' quests for future success." Spreitzer and Pugh (1973) take a similar view. Otto and Alwin (1977) also suggest that the benefits of participation in extracurricular activities may be mediated by the influence of significant others. In each of these examples a personal-social characteristic was posited to play a dual role. First, it was an outcome that was affected by participation in extracurricular activities. Second, it meditiated the effect of extracurricular activities on subsequent, more distal outcomes.

Methods

An Overview of The Present Investigation

The present investigation is based on responses by the sophomore cohort of the High School and Beyond (HSB) study conducted by the National Center for Educational Statistics (NCES, 1986). The data file includes an extensive set of variables collected from a very large, nationally representative sample of students in 1980 when respondents were sophomores, in 1982 when respondents were seniors, and in 1984 two years after the normal time of high school graduation. Variables selected for the present investigation are categorized as background/demographic variables (e.g., SES, race, gender, school year size, prior educational experiences), outcome variables collected in the sophomore and again in the senior years of high school (e.g., standardized achievement tests, GPA, coursework selection, self-concept, locus of control, absenteeism, getting into trouble, educational and occupational aspirations), post-secondary outcomes (educational attainment, educational and occupational aspirations), and 16 categories of extracurricular activity. The background and outcome variables are described in greater detail in Appendix 1 and the extracurricular activities are summarized in Table 1.

Insert Table 1 About Here

In preliminary analyses, factor analysis is used to explore relations among the different types of extracurricular activity, the antecedents of extracurricular participation are examined, and participation is related to dropping out of high school out between the sophomore and senior years. The major analyses, however, are the examination of the possible effects of

extracurricular participation on a wide variety of senior year and post-secondary outcome variables. In these analyses, multiple regression is used to relate extracurricular participation to senior and post-secondary outcomes after controlling all background variables and sophomore outcomes. In the first set of analyses, total participation across the 16 categories is considered. In these analyses the differential effects of participation in sophomore and senior years are considered as well as the type of participation (participant or leader). Linear and nonlinear effects of total participation are also considered as are the mediating influences of different dimensions of self-concept. In the second set of analyses, the differential effects of participation in the 16 activity categories are considered. Finally, the generality of the effects are examined across levels of sex, race, SES, school year size, college expectations and academic ability.

Sample

Data for the present investigation are based on the commercially available data file for the second follow-up of the sophomore cohort of the HSB study. A detailed description of this data base is available in the user's manual produced by the National Center for Educational Statistics (NCES, 1986). The data file includes variables collected in 1980 when respondents were sophomores, in 1982 when respondents were seniors, and in 1984 two years after the normal time of high school graduation. The sophomore cohort initially involved a two-stage probability sample of 1,015 high schools and approximately 36 sophomores within each of these schools. The second follow-up consisted of a random probability sample of 14,825 of the original sample. Because the focus of the present investigation is on changes that occur during the last two years of high school, only students who attended the same high school in their sophomore and senior years are considered in the major analyses (students who had the same school identification number in 1980 and 1982, had not dropped out, had not transferred to another school and had not already graduated), thereby reducing the sample size to a total of 10,613 students. Preliminary analyses on the entire sample were conducted, however, to determine if participation in extracurricular activities was related to dropping out, transferring to another school, or graduating early.

Responses in the present analysis were weighted so as to take into account the disproportionate sampling of specified subgroups in the HSB design (NCES, 1986, Table 3.5-1) and still maintain the total sample size at 10,613. Because of the cluster sampling in the HSB study, standard errors

based on the assumption of simple random sampling substantially underestimate the sampling variability in summary statistics and distort tests of statistical significance. In order to compensate for this bias, the weight for each respondent was divided by the estimated design effect of 2.40 (NCES, 1986, Table 3.6-5), reducing the nominal sample size from 10,613 to 10,613/2.4=4422 for purposes of testing statistical significance. (This reduction in nominal sample size has no effect at all on cell means and parameter estimates; it only affects the df used in tests of statistical significance.) A correlation matrix was then constructed for all the variables using pairwise deletion for missing values. The weighted number of cases for each variable varied from 3441 to the maximum possible of 4422. For purposes of statistical testing, a sample size of 4000 was assumed.

Design and Analysis

The HSB study was designed to assess the impact of a wide variety of independent variables on student growth and changes during the last two years of high school. The major independent variables in the present investigation were derived from the extracurricular activity variables presented in Table 1. The remaining 49 variables (see Appendix 1) were classified as background variables, and as sophomore, senior and post-secondary outcomes. For specific analyses, additional variables (e.g., interaction terms and nonlinear components) were formed from these variables. Consistent with the logic of the HSB design (e.g., Jencks, 1985; Hoffer, Greeley and Coleman, 1985; Marsh, in press), relations between extracurricular participation and outcome variables are not interpreted as participation effects. Even after controlling for background variables (e.g., sex, SES, race) there is insufficient basis for interpretting such relations as effects of participation in extracurricular activities. The relations of extracurricular participation to senior and post-secondary outcome variables after controlling for background variables and sophomore outcomes are, however, interpreted as extracurricular participation effects. In the operationalization of this design, multiple regression was used to predict each of the 22 senior and post-secondary outcomes from the combined set of the 12 background variables, the 15 sophomore outcomes, and the extracurricular participation variables. To the extent that the beta weights relating the participation variables to the senior and post-secondary outcome variables are statistically significant, participation is interpreted to affect the outcome variable.

Preliminary Analyses

Extracurricular participation variables. An important, unresolved

problem in this area of research is the definition of extracurricular variables to be considered. Inspection of the 11 sophomore and 17 senior items from the HSB study (Table 1) reveal many strengths but also some limitations of the available data. The strengths are the rich diversity of activities, the fact that most activities were measured in both sophomore and senior years, and the separation of participation and leadership role in the senior year. A potential limitation is that the senior and sophomore responses are not strictly parallel, though it may be argued that some activities (e.g., honor societies) are not relevant to sophomores and that sophomores will rarely have leadership roles in extracurricular activities. Also, whereas the variety of extracurricular activities is extensive, combining a few seemingly distinct activities (e.g., debate and drama) into a single item may be dubious.

The original 11 sophomore items were dichotomously scored (1=nonparticipant, 2=participant) whereas the 17 senior items were trichotomously scored (1=nonparticipant, 2=participant, 3=leader/officer). For present purposes responses to the 17 senior items were used to define two sets of 17 dichotomous variables representing participation (1=nonparticipant, 2=participant, 2=leader/officer) and leadership (1=nonparticipant, 1=participant, 2=leader/officer) respectively. A set of 5 total scores were derived from responses to these 45 (11 sophomore and two sets of 17 senior) dichotomous variables.

1) Total = mean of nonmissing values for all 45 variables.
2) T1 Total = mean of nonmissing values for the 11 sophomore items.
3) T2 Total = mean of nonmissing values for the 34 senior items.
4) T2 Participation Total = mean of nonmissing values for the 17 senior items (scored 0=nonparticipant, 1=participant, 1=officer/leader).
5) T2 Leadership Total = mean of nonmissing values for the 17 senior items (scored 0=nonparticipant, 0=participant, 1=officer/leader).

[Note: T2 = TP2 + TL2]

In addition, a set of 16 activity scores were defined as the mean of nonmissing responses to the items in each of the 16 extracurricular activities shown in Table 1. Because there are more senior items than sophomore items, and because senior leadership is scored separately from participation, senior participation is given more importance in scores based on both sophomore and senior responses. The validity of this a priori definition of total participation is empirically tested as part of the study.

Results and Discussion

Preliminary Analyses

Factor analyses of activity responses. In preliminary analyses, a variety of factor analyses were performed on the activity scores. In the first set of analyses, responses to the original 28 activity items were factor analyzed. Because the items are all either dichotomous or trichotomous and typically very skewed, the factor analysis results must be interpreted cautiously. Also, because the items represent two testing occasions and 16 activity areas, empirically derived factors may represent a mixture of the influences of time and content. Application of the "eigenvalue greater than 1" rule suggested that 11 factors were needed whereas maximum likelihood tests (SPSS, 1986) indicated that 15 factors were statistically significant. Examination of oblique solutions in which the number of factors varied from 5 to 16 suggested that the 11 factor solution shown in Table 2 was most interpretable. Given the potential problems in this application of factor analysis, the solution is surprisingly clean.

Insert Table 2 About Here

Ten of the 11 factors are defined primarily by matching items from the sophomore and senior years. The one additional factor is defined primarily by apparently high-status activities that were only surveyed in the senior year (e.g., honor societies, student government, school publications). Seniors were asked to distinguish between varsity athletics and other athletics whereas sophomores were only asked about general sporting participation, but all three items load substantially on the same factor (many varsity athletes also participate in other sports). One item unique to the senior survey -- fraternities and sororities -- did not load on any of the factors due in part to the low participation rate (less than 3%). Another item unique to the senior survey -- community service clubs and activities -- loaded modestly on the community youth organizations factor. The only exception to the general pattern of results was the pair of responses to participation in school subject-matter clubs; the sophomore variable tended to load on the hobby club factor whereas the senior variable tended to load on the first factor along with participation in honor societies.

In a second set of factor analyses, total scores representing the 16 activity areas were factor analyzed. A wide variety of different analyses, failed to provide an adequate solution. In all the solutions, many of the activity scores had small factor loadings and at least 3 or 4 scores did not load substantially on any factors. Furthermore, the composition of the factors varied substantially. Cheerleading, for example, was coupled with dance or

with vocational education (but never both) in different solutions. School publication participation was sometimes coupled with student government and honor societies and sometimes with drama/debate. Sport sometimes appeared on its own as a separate factor and was sometimes coupled with student government. When sport and student government formed a separate factor, honor societies and school subject clubs defined a separate factor. In other solutions, however, student government, yearbook/newspaper, and honors societies formed one factor whereas school subject clubs combined with hobby clubs.

In summary, factor analyses of responses to the individual items provided a clean solution whereas factor analyses of the 16 activity scores did not. Inspection of the correlation matrices used in these two analyses provides some clues. Correlations among the 16 activity scores, ranging from -.02 to .32 (median = .12), were very low. In contrast, correlations between responses to matching items on the sophomore and senior surveys varied from .22 to .65 (median = .39). These results suggest that participation in the same activity is reasonably stable over time, but that each of the different activities are reasonably independent. Whereas it may be justfiable to collapse responses to different activities to form a total participation index, it is likely that potentially important effects of specific activities will be masked by doing so. For this reason, separate analyses are conducted for total scores based on all activities and for the set of 16 total activity scores.

Students who dropped out, transferred, or graduated early. As noted earlier, the major analyses are based on students who attended the same school in 1980 and 1982. This is necessary because the focus of the study is on changes that occur between the sophomore and senior years of high school. An important issue, however, is the effect of participation in extracurricular activities on students dropping out of school between their sophomore and senior years of high school. For purposes of just the analyses described in this section, all students in the original HSB sample were considered. In addition to the background variables and sophomore outcomes, three dichotomous variables were defined to indicate whether or not students dropped out of school, transferred to a new school, or graduated early. After controlling background variables and sophomore outcomes, total participation in extracurricular activities during the sophomore year was not significantly related to any of these variables. Results predicting students who drop out are summarized in Table 3. Dropping out of school is most strongly related to absenteeism, school grades, and getting into trouble, but is not significantly related to participation in extracurricular activities.

Insert Tables 3 and 4 About Here

Antecedents of Total Extracurricular Participation

The question to be asked in this section is what is the relationship of the total activity scores to the background variables and sophomore outcomes? For the total activity score collapsed across sophomore and senior responses, the 12 background variables and the 15 sophomore outcomes explain 17.0% of the variance; 4.0% is uniquely due to the background variables, 6.9% is uniquely due to the sophomore outcomes, and the remainder can be explained by either background variables or sophomore outcomes (see Tables 3 and 4). Because the background variables are assumed to precede the sophomore outcomes, the joint effects are interpreted to be the indirect effects of the background variables that are mediated through the sophomore outcomes. Results for the other total scores (Table 4) show a similar pattern though the amount of variance explained is smaller. In one additional analysis the total senior activity score, was predicted by the sophomore activity score in addition to the background variables and sophomore outcomes. The correlation between the sophomore and senior activity scores is .32 though about half of this can be explained in terms of background variables and sophomore outcomes.

Because there are substantial correlations among the background variables and particularly among the sophomore outcomes, it is difficult to determine the effects of each variable separately. The relation between each background variable and total activity is represented by three coefficients (Table 3): the simple correlation (r), the relation after controlling the other background variables (b1), and the relation after controlling the other background variables and the sophomore outcomes (b2). Inspection of r and b1 suggest that total participation is positively associated with college expectations, attending a smaller high school, attending a rural high school, being black, being female, and coming from a family with a higher SES. Even after controlling for background variables, sophomore outcomes are all positively associated with total participation (b1 in Table 3). Because the sophomore outcomes are substantially correlated, however, the unique contribution of each sophomore outcome (b2 in Table 3) tends to be smaller. The largest positive associations are for social self-concept, GPA, and educational aspirations. Whereas results for analyses based on the other total scores are not presented, the general pattern of results are similar though the sizes of the coefficients tend to be smaller.

Because of the nature of the background variables it may be legitimate to interpret them as affecting extracurricular participation. The interpretation

of the sophomore outcomes is not so clear-cut. A similar pattern of relations was observed, however, between sophomore outcomes and senior activity variables. Furthermore, sophomore outcomes continued to explain much of the variance in senior activities even after controlling for sophomore activities and background variables. That is, changes in levels of participation in extracurricular activities were associated with sophomore outcomes. Because many competing explanations can be ruled out, it may also be reasonable to infer that sophomore outcomes affect subsequent extracurricular activity.

This suggestion that sophomore outcomes may affect pariticipation is particularly important for studies that attempt to infer the effects of participation on the basis of a single wave of data. As noted previously (Holland & Andre, 1987; Otto, 1982) it is not be possible to establish whether a correlation between participation and outcomes represents a cause or an effect if the relation is not examined with longitudinal data.

Consequences Of Total Extracurricular Participation.

Consistent with the design of the HSB study, total activity scores are interpreted to affect senior and post-secondary outcomes if the total activity scores are significantly related to these outcomes after controlling the effects of background variables and sophomore outcomes. As is typical in HSB studies, the influence of any independent variable on senior and post-secondary outcomes tends to be small after controlling the influence of earlier variables. The effects of total extracurricular participation is, however, statistically significant for 13 of 22 outcomes (Table 5) and all of these effects are positive (see Table 6). Extracurricular participation favorably affected (in order of size of the effect) social self-concept, academic self-concept, taking advanced courses, time spent on homework, post-secondary educational aspirations, GPA, parental involvement, absenteeism, senior year educational aspirations, being in the academic track, college attendance, parental aspirations and senior occupational aspirations. Whereas the sizes of these statistically significant and positive effects are small, the effects are in addition to the already substantial effects of background variables and sophomore outcomes.

Insert Tables 5 and 6 About Here

Tests of the operationalization of total activity scores. The total activity score as operationalized in this study represents a combination of consistency of participation over the sophomore to senior years and -- in the senior year -- the type of participation (i.e., participant or leader). In order to test this operationalization and also because of the potential

importance of these different components of participation, it is important to examine the effects of each component separately. Using similar analyses as used for the total activity score, the effects of more specific total activity scores and combinations of these total scores were examined.

In contrast to total activity scores, total sophomore participation scores had almost no effect on senior and post-secondary outcomes. There were significant effects for only 2 or 22 outcomes. The two significant effects on academic and social self-concept were both positive, but much smaller than the effects of the total participation scores. Total senior activity scores, on the other hand, had almost the same effects as the total activity scores across sophomore and senior years. These results suggest that extracurricular participation at the end of high school is much more important than at the beginning of high school.

In the operationalization of total senior activity scores, participation earned one point and participation in a leadership role earned an additional point. In order to further examine this distinction, separate analyses were done on participation (i.e., leadership and participation were not differentiated) and on leadership (i.e., only leadership was counted). Participation has more significant and larger effects than does leadership. Whereas there are significant effects associated with leadership, these are generally not in addition to the effects of participation. When multiple regression was used to optimally weight the senior participation and leadership scores, the variance explained was nearly the same as the simple unweighted average of the two (i.e., the total senior activity score). It should be noted that because the variance in the participation scores was much greater than in the leadership scores, the a priori operationalization weighted the participation scores more highly than the leadership scores and this was shown to be appropriate. These findings may initially appear to be paradoxical, but the apparent explanation is that the overall benefits attributable to participation is greater because so many more students are able to participate than are able to hold leadership roles in the extracurricular activities.

In a final analysis, multiple regression was used to weight the total sophomore activity score, the senior leadership score and the senior participation score in the prediction of each senior and post-secondary outcome. This optimally weighted combination, however, has nearly the same relation to each of the senior and post-secondary outcomes as does the a priori total score. These empirical analyses provide strong support for the a priori definition of the total activity scores.

Nonlinear relations between total participation and outcomes. Implicit in the application of multiple regression is the assumption that total activity scores are linearly related to the senior and post-secondary outcomes. Though this assumption has not been previously tested to my knowledge, it may be that participation in too many activities has diminishing returns. In order to test this possibility, a quadratic term was computed by including the squared total activity score (after standardizing to Mn=0, SD=1) to the regression equation. The addition of the nonlinear term contributes significantly to the prediction of the senior and sophomore outcomes. When both linear and nonlinear terms are included, the linear term is statistically significant for 17 of the 22 outcomes whereas the nonlinear term is significant for 15 of the outcomes. In every case, the linear component is more positively related to the outcomes when the quadratic term is included, suggesting that the nonlinear component suppressed the linear relationship between participation and subsequent outcomes.

For all relations with a significant nonlinear component, the form of the relationship is very consistent. All 15 relations represent an inverted U shaped function in which the maximum outcome (see Table 6) is realized somewhere between .2 and 1.6 standard deviations above the mean of the total activity scores. This indicates that for much of the range of total activity scores greater participation leads to greater benefits. For nearly all the outcomes affected by participation in extracurricular activities, however, there is a point beyond which additional activities apparently leads to diminishing benefits. It is interesting to note that this nonlinearity is evident in the social self-concept and academic self-concept variables as well as in outcomes representing more traditional academic outcomes.

Mediating variables. Previous research has suggested that participation in extracurricular activities may enhance different components of self-concept and this may lead to changes in other outcomes. Self-concept is posited to serve a dual role as a proximal outcome that is affected by participarion in extracurricular activies and as a mediating variable that mediates the effects of participation on more distal outcomes. There are three different components of self-concept in the senior outcome variables -- general self-concept, academic self-concept, and social self-concept. If the effects of participation on other outcomes are mediated by these variables, then the inclusion of the self-concept variables in the regression equations as predictor variables instead of outcome (predicted) variables should substantially reduce the influence of the total activity scores.

As posited, the inclusion of the self-concept variables substantially reduced the variance attributed to the total activity scores (see Table 6). For the remaining outcome variables that were significantly affected by total participation, the variance accounted for by total activities was reduced about 40% when the self-concept variables were controlled. The effects of total participation, however, remained statistically for most of these outcome variables. Supplemental analyses were conducted to determine how much of this reduction was attributable to each of the different self-concept variables. Controlling general self-concept had almost no effect on activity-outcome relations due to the fact that general self-concept was apparently unaffected by participation (Table 6). Whereas the effect of participation was substantially larger for social self-concept than for academic self-concept, controlling academic self-concept reduced the sizes of participation-outcome relations more than did controlling social self-concept.

In additional, unreported analyses, the participation-outcome variables were controlled for parental involvement and parental aspirations. Controlling for these influences of a significant other, however, did not reduce the size of the participation-outcome relations as much as did controlling the self-concept variables. Furthermore, when both the parental variables and the self-concept variables were controlled, the reduction in the sizes of the participation-outcome relations differed little from that due to controlling just the self-concept variables.

The observation that general self-concept is much less important than specific dimensions of self-concept is consistent with recent research emphasizing the multidimensionality of self-concept. The fact that controlling academic self-concept reduced participation-outcome relations more than did controlling social self-concept apparently is due to the academic orientation of many of the other outcomes.

Consequences of Participation in Specific Extracurricular Activities.

Total participation across 16 different activity areas was shown to have small but significantly positive effects on a wide variety of senior and post-secondary outcomes. The question to be addressed here is whether there are some activities that have more positive effects and others that have little effect or even negative effects?

In a preliminary analysis, the effects of the entire set of 16 activity scores were assessed instead of the effects of just the single total activity score. The set of 16 specific activity scores explained significantly more variance than the total activity score, thus providing further justification

for the examination of separate activities. In subsequent analyses, a backwards elimination process was used to eliminate activity scores that did not contribute significantly ($p < .05$) to the prediction of each of the 22 senior and post-secondary outcomes. Separate analyses were conducted for each outcome. In summarizing these results (Table 7), the dashes indicate that an activity score was eliminated by the backwards elimination procedure because it did not contribute uniquely to the prediction of the corresponding outcome. Other entries are the standardized regression weights, all of which are statistically significant, in the final set of regression equations.

Insert Table 7 About Here

Across the 16 activities and 22 outcomes, there were a total 76 statistically significant effects; 58 were positive and 18 were negative. One activity (community youth groups) had no significant effects. Three activities had only significantly negative effects (dance; hobby clubs; and fraternities and sororities) and vocational education clubs had predominantly negative effects. Three activities (junior achievement; drama; and music) had mixed positive and negative effects. Eight activities had only positive effects -- the numbers in parentheses being the number of positive effects -- sport (13), honor societies (9), student government (7), community service organizations (6), school publications (5), church organizations (5), school subject matter activities (4), and cheerleading (1).

Implicit in the interpretations of these relations is the assumption that participation in extracurricular activities affects senior and post-secondary outcomes. The characteristics of the study make this interpretation plausible, but it is always dubious to infer causation on the basis of correlation. I am particularly cautious about the interpretation of the participation in honor societies. Whereas it is reasonable to assume that being selected for such a group has positive benefits, the basis of selection overlaps substantially with the outcomes considered here. Because this selection is likely to take place at least a year after collection of sophomore outcomes, controlling for sophomore outcomes may not fully control the criteria used in the selection process. On the other hand, the background and sophomore outcomes do provide important controls. For example, the participation in honor societies correlates with senior grades .44 with no controls, .33 controlling just background variables, and only .032 controlling background and sophomore outcomes (including sophomore grades which correlated .43 with participation). The relevant question is whether this small residual growth in school grades was part of the selection process

or occurred subsequent to the selection process, but this question cannot be addressed with the HSB data. Whereas such an alternative explanation could apply to participation in other activities, the possibility appears remote.

Based on these analyses, sport is the most beneficial extracurricular activity. Its largest effect is on social self-concept but it also favorably affects academic self-concept, course selection, homework, absenteeism, educational aspirations and attainment, parental aspirations and parental involvement. Its affect on social self-concept is much greater than any of the other activities, but so is its affect on academic self-concept, senior and post-secondary educational aspirations, and college attendance.

Participation in student government and in school publications also have substantial benefits. Like sport, the largest effects are on social self-concept but generalize to other outcomes as well. The conservative nature of the analyses used here may also under represent the benefits associated with these activities. All activities were entered simultaneously, and so the effects in Table 7 are the effects associated with a particular activity after controlling for participation in all other activities. Because participation levels in the different activities are not highly correlated (median $r = .12$) this is not an important problem. Participation in honors societies, student government and school publications are, however, moderately correlated (rs between .23 and .29) and each of these activities has positive effects on other outcomes.

Being involved in church-related activities improves time spent on homework, a lack of absenteeism, staying out of trouble, parent involvement, and also academic self-concept. Whereas these effects may be predictable -- except perhaps the academic self-concept effect -- they are nevertheless worthwhile benefits. The positive effects of participation in community service organizations -- particularly given the lack of effects of community youth organizations -- is curious. The positive effects, it should be noted, occur for only educational and occupational aspirations and for college attendance. Perhaps participation in these organization provides important contacts, reinforcement, or even monetary incentives in the way of scholarships that affect these senior and post-secondary outcomes.

Several of the activities have exclusively or primarily negative effects. Being in a fraternity or sorority increases the likelihood of getting into trouble but has no other effects. Being involved in dance results in taking fewer math and science and other "academic" courses, but has no other negative effects. Being involved in music also results in

taking fewer academic courses but increases educational aspirations and college attendance. Participation in hobby clubs reduces perceived parental aspirations (but not the student's own educational aspirations), occupational aspirations, and college attendance.

Participation in vocational educational activities has a particularly interesting set of effects. Except for sport, it has the largest number of significant effects but most are negative: poorer standardized test scores, less honors courses, less likely to be in the academic track, less math and science and other academic courses. Participation does, however, have slight positive effects on school grades (perhaps reflecting coursework selection) and general self-concept. In fact, participation in this activity is the only one to have any effect -- positive or negative -- on general self-concept. Whether these predominantly negative effects are necessarily bad involves a value judgment that may go beyond the scope of this study.

The Consistency of Effects Across Different Subgroups.

The analyses considered thus far examined the effects of extracurricular participation across all students. The results suggest that there are generally positive effects associated with participation. The question to be addressed here is whether these benefits differ for particular subgroups within the total sample. For purposes of answering this question, seven variables were considered: Black, Hispanic, SES, sex, school year size, college expectations and sophomore academic ability scores. Scores for each of these seven variables were multiplied by the total participation score (after standardizing both scores to Mn=0, SD=1), and these seven cross-product scores were entered into the multiple regression equations to predict the 22 senior and post-secondary outcomes. The additional variance explained by the set of seven crossproducts (i.e., interaction terms) were tested for statistical significance ($p < .05$). If this overall test was significant, then the statistical significance of each of the individual interaction terms was examined. The additional variance attributable to the set of seven crossproducts never exceeded 0.4% of the variance but was statistically significant for 8 of the 22 outcomes (see Table 8). In these 8 regression equations, a total of 11 individual interaction terms were statistically significant. Over half (7 of 11) involved SES. Inspection of these interactions indicates that students from lower-SES families benefit more than students from higher-SES families for all 7 interactions. Three of the 11 interactions involve ability. For these interactions, however, the benefits of participation are greater for initially more able students. Whereas the

effects of participation in extracurricular activities interact with some of the background variables to a small extent for a few of the outcomes, the effects are generally consistent across levels of these variables. In summary the effects of participation in extracurricular activities are reasonably consistent across sex, ethnicity, ability levels, school year size and levels of college participation, though, perhaps not for levels of SES.

Insert Table 8 About Here

Analyses described above ask whether the effects of total participation interact with selected background variables, and the answer -- at least to a first order approximation -- was that they did not. The next question to be addressed is whether the effects of participation in particular activities interacted with background variables. If the approach considered thus far was applied, interaction terms between each of the 16 activities and the 7 background variables (16 x 7 = 112 interaction terms) would be entered into the regression equations along with the 11 background variables, 15 sophomore outcomes and 16 activity scores for each of the 22 outcomes. Besides outstripping the capacity of most computers, trying to interpret the 2464 interaction effects resulting from such an analysis would be daunting. To reduce the scope of the analysis, I selected eight activities shown to have the most effect in earlier analyses (sport, subject-matter, vocational education, church related, honor societies, school publications, student government, and community service; see Table 7) and five background variables that included all of those that interacted with total participation in earlier analyses (Black, Hispanic, SES, sex, sophomore ability; see Table 8). This reduced the number of interaction terms to be considered in each equation to 40. The set of 40 interaction terms did not contribute significantly to the prediction of any of the 22 outcomes (all $p > .25$). In an alternative approach, I used a backward elimination procedure to eliminate all interactions that were not statistically significant at $p < .01$ and at $p < .05$. Of the total of 880 interactions, only 7 (0.8%) were significant at $p < .01$ whereas only 27 (3.1%) were significant at $p < .05$. Because the number of statistically significant interactions did not even reach the number that might be expected on the basis of chance alone, the interpretation of these effects was not pursued. These results suggest that the effects of participation in these particular extracurricular activities are reasonably consistent across sex, ethnicity, SES and ability levels.

Summary and Implications

The overall purpose of the present investigation was to determine the

effect of participation in extracurricular activities on senior and post-secondary outcomes. The results provided clear support for the benefits of participation, but with a few qualifications. First, there was a nonlinear effect in many of the relations indicating that participation in activities beyond an optimum may have diminishing returns. This optimum was, however, always well above the average participation level and so it is only extreme levels of participation that are worrisome. Second, the benefits associated with different activities varied substantially. A few activities (e.g., sport, honor societies, school publications, student government, service organizations, and church organizations) had only positive effects on a variety of outcomes, but some other activities had either little systematic effect or systematically negative effects. Third, for some outcomes students from lower-SES backgrounds apparently derived more benefits from participation. The first two qualifications -- the nonlinearity and differential effects of specific activities -- appear to be important new contributions of the present investigation.

The most important methodological issue facing researchers in this field is determining whether correlations between participation levels and outcomes reflect the causal influence of participation. Because of the nature of extracurricular activities as a self-selected intervention, there may never be any completely adequate solution to this problem. Studies based on a single-wave of data apparently are not able to resolve this problem and should not be given undue attention. Even in multi-wave studies, it is important that posttest outcome measures be controlled for appropriate pretest measures. The best approach apparently is to correct each posttest outcome for background variables and for a set of pretest outcomes that largely parallel the posttest outcomes. In this respect, it is changes in the outcomes that are related to participation in extracurricular activities. Even this rigorous design, however, is not fool-proof. Because participation levels may also change over the period between the multiple waves of data collection, there is still the possibility that changes in the outcome variables lead to changes in participation levels. This counter explanation of the results is plausible in the case of some activities like honor societies in which the subsequent outcomes overlap with the selection criteria used to determine membership. For other activities this counter-explanation seems less viable.

There is a tendency in the study of extracurricular activities to collapse many activities -- except, perhaps, sport -- into a single global participation category. The results of the present investigation demonstrate

apparent limitations to this practice. The factor analytic results provided no empirical support for collapsing different categories, showing instead that the categories of participation are relatively uncorrelated. Consistent with these results, subsequent analyses showed differential benefits associated with particular extracurricular activities.

Previous research has been largely empirical in nature and theoretical accounts of how participation in extracurricular activities affects social and academic outcomes have not been well articulated. The most influential theoretical approach is the zero-sum type model proposed by Coleman (1961; also see Otto & Alwin, 1977) in which commitment to academic, social or academic pursuits necessitates a reduction in commitment to the other two. Because extracurricular activities represent the social and athletic domains, participation in them is posited to detract from traditional academic pursuits. Despite the important influence of this theoretical hypothesis, there seems to be overwhelming evidence against it. As found here, participation in extracurricular activities has typically been found to facilitate academic outcomes rather than to detract from them. Limited support for the negative effects of participation may come from the nonlinear relation between total activity scores and many outcomes in that participation beyond some optimal point has diminishing returns. This only occurs, however, for very high participation levels. An alternative perspective is that participation in extracurricular activities enhances self-concept and the improved self-concept has positive effects on other outcomes. Support for this position was found here in that controlling general, social and academic self-concept variables reduced the sizes of other participation-outcome relations. Interestingly, however, the mediating influence of self-concept was due primarily to academic self-concept, less to social self-concept and not at all to general self-concept. This pattern of results is consistent with a multidimensional perspective on self-concept in which specific facets of self-concept are more strongly related criterion measures than are general measures of self-concept. The observation that academic self-concept mediates more variance than social self-concept reflects in part the academic orientation of many of the outcomes selected for this study. It also apparently reflects, however, an increased identification with academic related pursuits produced by participation in extracurricular activities beyond the influence of participation on social status.

REFERENCES

Baird, L.L. (1969). Big school, small school: A critical examination of the hypothesis. Journal of Educational Psychology, 60, 253-260.

Barker, R. G. & Gump, P. V. (1964). Big school, small school: High school size and student behavior. Stanford, CA: Stanford University Press.

Brown, B. B. (1988). The vital agenda for research on extracurricular influences: A reply to Holland and Andre. Review of Educational Research, 58, 107-111.

Cohen, J. & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behavioral sciences (2nd ed.). Hillsdale NJ: Erlbaum.

Coleman, J. S. (1959). Academic achievement and the structure of competition. Harvard Educational Review, 29, 330-351.

Coleman, J. S. (1961). The adolescent society. New York: Free Press of Glencoe.

Cook, T. D., & Campbell, D. T. (1979). Quasi-Experimentation: Design & analysis issues for field settings. Chicago: Rand McNally.

Grabe, M. (1976). Big school, small school: Impact of the high school environment. Contemporary Educational Psychology, 1, 20-25.

Grabe, M. (1981). School size and the importance of school activities. Adolescence, 61, 21-31.

Hanks, M. P., & Eckland, B. K. (1976). Athletics and social participation in the educational attainment process. Sociology of Education, 49, 271-294.

Hauser, W. J., & Lueptow, L. B. (1978). Participation in athletics and academic achievment: A replication and extension. The Sociological Quarterly, 19, 304-309.

Heyns, B., & Hilton, T. L. (1982). The cognitive tests for High School and Beyond: An assessment. Sociology of Education, 55, 89-102.

Hoffer, T., Greeley, A. M., & Coleman, J. S. (1985). Achievement growth in public and Catholic schools. Sociology of Education, 58, 74-97.

Holland, A., & Andre, T. (1988). Beauty is in the eye of the reviewer. Review of Educational Research, 58, 113-118.

Holland, A., & Andre, T. (1987). Participation in extracurricular activities in secondary school: What is known, what needs to be known? Review of Educational Research, 57, 437-466.

Holland, A., & Andre, T. (1988). Beauty is in the eye of the reviewer. Review of Educational Research, 58, 113-118.

Howell, F. M., Miracle, A. W., & Rees, C. R. (1984). Do high school athletics pay? : The effects of varsity participation on socioeconomic attainment. Sociology of Sport Journal, 1, 15-25.

Jencks, C. (1985). How much do high school students learn. Sociology of Education, 58, 128-135.

Landers, D. M., & Landers, D. M. (1978). Socialization via interscholastic athletics: Its effects on delinquency. Sociology of Education, 51, 57-65.

Lindsay, P. (1984). High school size, participation in activities, and young adult social participation: Some enduring effects of schooling. Educational Evaluation and Policy Analysis, 6, 73-83.

Marsh, H. W. (in press). The effects of attending single-sex and coeducational high school on achievement, attitudes and behaviors and on sex differences. Journal of Educational Psychology,.

Marsh, H. W., & Shavelson, R. (1985). Self-concept: Its multifacets, hierarchical structure. Educational Psychologist, 20, 107-123.

National Center for Educational Statistics (1986). High School and Beyond, 1980: Sophomore cohort second follow-up (1984). Data file user's manual. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Otto, L. B. (1975). Extracurricular activities in the educational attainment process. Rural Sociology, 40, 162-176.

Otto, L. B. (1976). Extracurricular activities and aspirations in the status attainment process. Rural Sociology, 41, 217-233.

Otto, L. B. (1982). Extracurricular activities. In H. J. Walberg (Ed.)., Improving educational standards and productivity (pp. 217-233). Berkeley, CA: McCuthan.

Otto, L. B., & Alwin, D.F. (1977). Athletics, aspirations, and attainments. Sociology of Education, 42, 102-113.

Pedhazur, E. J. (1982). Multiple regression in behavioral research (2nd ed.). New York: Holt, Rinehart and Winston.

Peek, C. W., Picou, J. S., Alston, J. P. & Curry, W. W. (1979). Interscholastic athletics and delinquent behavior: Appraisal or Applause? Sociology of Education, 52, 429-438.

Schafer, W. E. (1969). Participation in interscholastic athletics and delinquency: A preliminary study. Social Problems, 17, 40-47.

Schendel, J. S. (1965). The psychological characteristics of high school athletes and nonparticipants in athletics at three educational levels. Research Quarterly, 36, 52-67.

Snyder, E. E. (1969). A longitudinal analysis of the relationship between high school values, social participation, and educational-occupational achievement. Sociology of Education, 42, 261-270.

Snyder, E. E., & Spreitzer, E. (1977). Participation in sports as related to educational expectations among high school girls. Sociology of Education,

50, 47-55.

Spady, E. E. (1970). Lament for the letterman: Effects of peer status and extracurricular activities on goals and achievement. American Journal of Sociology, 75, 680-702.

Spady, E. E. (1971). Status, achievement, and motivation in the American high school. School Review, 79, 379-403.

Spreitzer, E., & Pugh, M. (1973). Interscholastic athletics and educational expectations. Sociology of Education, 46, 171-182.

Taylor, J. L., & Chiogioji, E. N. (1988). The Holland and Andre study on extracurricular activities: Imbalanced and incomplete. Review of Educational Research, 58, 99-105.

Wicker, A. (1968). Undermaning, performances, and students' subjective experiences in behavior settings of large and small high schools. Journal of Personality and Social Psychology, 10, 255-261.

Willems, E. (1967). Sense of obligation to high school activities as related to school size and marginality of student. Child Development, 38, 1247-1260.

Table 1

The Percentage of Students Participating in 16 Categories of Extracurricular Participation in Their Sophomore and Senior Years of High School

Activity (Verbatim wording of the items)	Sophomore Partic	Senior Partic	Senior Leader
Sports			
Athletic teams - in or out of school (sophomore)	57%	--	--
Varsity athletic teams (senior)	--	36%	15%
Other athletic teams in or out of school (senior)	--	41%	10%
Cheerleading			
Cheer leaders, pep club, majorettes	15%	14%	4%
Drama/Debate			
Debating or drama	11%	13%	3%
Music			
Band or Orchestra	17%	15%	3%
Dance/Chorus			
Chorus or dance	23%	19%	4%
Hobby Clubs			
Hobby clubs such as photography, model building hot rod, electronics, craft	21%	19%	3%
School Subject Clubs			
School subject matter clubs such as science, history, languages, business, art.	27%	20%	3%
Vocational Education Clubs			
Vocational education clubs such as Future Homemakers, Teachers, Farmers of America, DECA, FBLA, or VICA	14%	24%	8%
Community Youth Clubs			
Youth organizations in the community such as scouts, Y, etc.	20%	17%	6%
Church Activities			
Church activities including youth groups	40%	37%	11%
Junior Achievement			
Junior achievement	6%	5%	1%
Publications			
School newspaper, magazine, yearbook annual (senior)	--	19%	6%
Student Government			
Student council, student government, political club (senior)	--	17%	7%
Service Clubs			
Service clubs or other community service activities (senior)	--	16%	4%
Honor Societies			
Honorary clubs, such as Beta club or National Honor society (senior)	--	16%	3%
Fraternity/Sorority			
Sororities or fraternities (participation)	--	3%	1%

Note. In their sophomore year students were asked "Have you participated in any of the following types of activities either in or out of school?" to which they responded "Have not participated" or "Have participated actively." In their senior year students were asked "Have you participated in any of the following types of activities either in or out of school this year?" to which they responded "Have not participated," "Have participated actively (but not as a leader or officer)" or "Have participated actively as a leader or officer" Senior participation percentages reported here include those participating as a leader or officer.

Table 2

Factor Analysis of the Responses to the Original 28 Activity Items

Variable	1	2	3	4	5	6	7	8	9	10	11
Sports											
Sophomore	-11	67	00	00	04	01	-02	05	-05	-03	05
Senior (Varsity)	09	76	01	00	-03	02	00	-01	-01	-08	-08
Senior (other)	01	60	00	-01	-05	-01	01	-09	05	07	03
Cheerleading											
Sophomore	00	-04	01	03	78	-02	-01	-03	02	00	03
Senior	19	02	06	05	56	-09	00	-11	12	09	-10
Drama/Debate											
Sophomore	08	-01	01	03	-02	-03	01	64	07	05	-02
Senior	26	-01	07	03	-09	09	-02	46	20	10	-04
Music											
Sophomore	-08	00	73	-01	05	05	09	05	-06	-06	03
Senior	03	00	94	-01	-05	-05	-03	-05	03	02	-03
Dance/Chorus											
Sophomore	-16	00	01	-01	12	15	03	14	50	-07	07
Senior	-04	00	02	-03	04	05	01	04	82	-04	01
Hobby Clubs											
Sophomore	-05	01	01	-01	01	01	02	01	00	01	50
Senior	13	02	02	03	-08	-09	-02	-09	07	12	41
School Subject Clubs											
Sophomore	17	02	00	05	07	10	05	06	-02	-12	25
Senior	40	-03	-03	07	-01	-06	03	-02	00	00	16
Vocational Education Clubs											
Sophomore	-07	00	-02	50	07	06	03	06	-03	-09	04
Senior	-03	00	01	82	-04	-02	-03	-02	-01	09	-06
Community Youth Clubs											
Sophomore	-16	05	04	-05	09	17	09	18	-01	65	07
Senior	-06	05	02	04	02	09	00	06	-07	34	13
Church Activities											
Sophomore	05	-01	04	04	-02	66	00	-01	06	00	-02
Senior	15	04	03	05	-07	63	00	-12	12	19	-07
Junior Achievement											
Sophomore	-09	00	-01	-03	01	-01	76	06	05	09	00
Senior	11	00	-02	06	-06	06	40	-10	09	11	-01
Publications											
Senior	38	05	-01	-02	05	00	-01	12	05	02	06
Student Government											
Senior	39	14	00	-01	12	01	01	09	02	08	-04
Service Clubs											
Senior	23	01	-03	-02	04	07	07	03	04	30	00
Honor Societies											
Senior	48	02	05	-04	07	11	02	06	-04	-02	02
Fraternity/Sorority											
Senior	14	01	03	05	02	-05	11	-07	07	15	-02
[a] Factor Correlations											
1 Senior Activity	--										
2 Sport	16	--									
3 Music	15	08	--								
4 Vocational Educ	14	-03	03	--							
5 Cheerleading	13	11	19	14	--						
6 Church Activities	05	14	16	12	23	--					
7 Junior Achievement	15	06	11	18	12	13	--				
8 Drama/debate	08	07	14	-05	20	24	04	--			
9 Chorus/dance	30	05	20	10	20	16	17	20	--		
10 Youth Organizat	28	20	15	08	01	14	24	02	26	--	
11 Hobby Clubs	12	12	10	15	07	18	20	14	04	11	--

Note. See Table 1 for the wording of the items. All factor loadings and factor coefficients, presented without decimal points, were derived from a principal axis factor analysis (SPSS, 1986).

[a] Factor labels are based on the content of items that define each factor.

Table 3

Dropping Out of High School, Background Variables, Sophomore Outcomes, and Participation in Extracurricular Activities

	Dropping Out b	Total Activities r	b1	b2
Activities				
Soph Total	005			
Background Variables				
Sex	01	07**	07**	03
SES	00	14**	15**	09**
Race--Black	-01	07**	12**	09**
Race--Hispanic	-01	00	06**	06**
Public School	02	-01	05**	05**
Repeated Grade	a	-03	00	01
College Expect	-03	22**	19**	07**
Kindergarten	-08**	03	00	00
Urban	06**	-02	02	02
Rural	00	10**	11**	10**
Mother Works	02	01	00	-01
School Year Size	04*	-12**	-13**	-12**
Sophomore Outcomes				
Acad Ability	-05*	09**	03	-09**
Grades	-11**	22**	19**	10**
Acad Track	-00	13**	05**	01
Honors	02	17**	12**	08**
Homework	-01	16**	09**	05**
Absenteeism	-17**	08**	05**	02
Locus Control	-01	11**	05**	01
Self-Esteem	-02	11**	07**	-01
Parent Inv	-01	15**	10**	04**
Parent Ed Aspir	-05*	19**	08**	02
Educ Aspir	-02	23**	15**	08**
Occup Aspir	00	13**	04*	00
Academic Self	03	23**	16**	04*
Trouble	-11**	12**	07**	04*
Social Self	01	20**	17**	17**
Mult R Squared	148			170
Unique to Background Variables	014			040
Unique to Sophomore Outcome Variables	090			069

Note. In the first multiple regression dropping out was predicted from the background variables, the sophomore outcomes, and participation in extracurricular activities in the sophomore year. For just this analysis, no cases were excluded. In the second multiple regression, the total activities for sophomore and senior year were related to background variables and sophomore outcomes. For this analysis r = simple correlation, b1 = relation after controlling background variables, b2 = relation after controlling for background variables and sophomore outcomes. All coefficients are presented without decimal points.

a This item came from the senior survey and so was not available for students who had dropped out.

* $p < .05$; ** $p < .01$.

Table 4

Antecedents of Extracurricular Participation: Percentage of Variance in Total Activity Scores Predictable From the Set of 11 Background Variables and 15 Sophomore Outcomes (see Appendix 1 for description of variables)

	Total Activity Scores (Predicted Scores)					
Predictor Scores	Total[a]	Total T2	Total T2	T2 Participation	T2 Leadership	Total T1
Background Variables						
Total	10.1%	8.2%	8.2%	8.4%	5.1%	5.0%
Unique	4.0%	3.5%	2.4%	3.4%	2.5%	2.6%
Sophomore Outcomes						
Total	13.0%	11.1%	11.1%	11.4%	6.5%	6.7%
Unique	6.9%	6.4%	4.4%	6.4%	4.0%	4.3%
T1 Total Activity						
Total	--	--	10.4%	--	--	--
Unique	--	--	5.2%	--	--	--
Mult R^2 x 100%	17.0%	14.6%	19.8%	14.8%	9.0%	9.3%

Note. T1=sophomore year, T2=senior year. Each total activity score was predicted from the set of 11 background variables, the set of 15 sophmore outcomes, and -- for just one analysis of the T2 total score -- the T1 total activity score. Total variance is the variance predicted by a set of predictor variables without controlling any other variables. Unique variance is the variance predicted by one set of predictor variables that cannot be predicted by other sets of variables in the same analysis.

[a] See Table 4 for the beta weights for this analysis.

Table 5

Consequences of Extracurricular Participation: Percentage of Variance in Each Senior and Post-secondary Outcome that is Predictable From Various Total Activity Scores After Controlling For the Set of 11 Background Variables and 15 Sophomore Outcomes (see Appendix 1 for description of variables)

Outcomes (Predicted Variable)	Total Activity Scores (Predictor Variables)						
	Total	T1	T2	T2P	T2L	T2P,T2L	T1,T2P,T2L
Senior Year							
Acad Ability	000	000	000	000	000	000	000
Grades	003‡‡	000	002‡‡	002‡‡	002‡‡	002‡‡	002‡‡
Honors	006‡‡	001	005‡‡	005‡‡	003‡‡	005‡‡	006‡‡
Acad Track	002‡‡	000	001‡‡	001‡	000	001‡	002‡‡
Homework	005‡‡	000	003‡‡	004‡‡	001	005‡‡	005‡‡
Absenteeism	002‡	000	001‡	002‡	000	001‡	002‡
Math Pattern	000	000	000	000	000	000	000
Science Patt	000	000	000	000	000	000	000
Acad Credit	000	000	000	000	000	000	000
Locus Contl	000	000	000	000	000	000	000
General Self	001	001	000	000	000	000	001
Parent Inv	003‡‡	001	002‡‡	002‡‡	001‡	002‡	003‡‡
Parent Aspir	001‡	000	001‡	001‡	000	001	001
Educ Aspir	002‡‡	000	002‡‡	002‡	001‡‡	002‡‡	002‡‡
Occup Aspir	001‡	000	002‡	002‡	001‡	001‡	002‡
Acad Self	009‡‡	001‡	008‡‡	007‡‡	005‡‡	008‡‡	008‡‡
Trouble	000	000	000	000	000	000	000
Social Self	021‡‡	006‡‡	017‡‡	017‡‡	009‡‡	017‡‡	021‡‡
Post-secondary							
Unemployed	000	000	000	000	000	000	000
University	001‡‡	000	002‡‡	002‡‡	001‡	002‡‡	002‡‡
Educ Aspir	004‡‡	000	006‡‡	006‡‡	003‡‡	006‡‡	006‡‡
Occup Aspir	001	000	001‡	000	001‡	001‡	001

Note. Total=total activity score. T1=total sophomore activity score. T2=total senior activity score. T2P=total senior participation score. T2L=total senior leadership score. (Note: T2=T2P + T2L) A series of multiple regressions was conducted in which each senior and post-secondary outcome was predicted from (a) background variables, (b) sophomore outcomes, and (c) one or more total activity scores. The values presented are the unique variance due to each individual or each set of activity scores.

‡ $p < .05$; ‡‡ $p < .01$.

Table 6

Consequences of Extracurricular Participation: Linear and Nonlinear Components of the Total Activity Scores, Linear and Nonlinear Components After Controlling Senior Social and Academic Self-Concepts

	Total Activity Scores (Predictor Variables)								
	Linear[a]		Linear and Nonlinear[b]				Linear and Nonlinear Controlling Academic & Social Self Concept[c]		
Outcomes (Predicted Variables)	r	beta	beta linear	beta quad	z-score Maximum	d Var	beta linear	beta quad	d Var
Senior Year									
Acad Ability	106**	004	032**	-040**	0.40	001**	027**	-037**	001**
Grades	231**	063**	085**	-030*	1.42	004**	049**	-012	001**
Honors	203**	086**	110**	-034*	1.62	007**	101**	-029	005**
Acad Track	181**	045**	067**	-030	---	002**	050**	-022	001**
Homework	193**	078**	114**	-049**	1.16	006**	087**	-036*	004**
Absenteeism	101**	054**	079**	-035	---	003**	059**	-025	002*
Math Pattern	119**	-015	005	-028	---	001	-002	-024	001
Sci Pattern	120**	-005	015	-027	---	000	004	-022	000
Acad Credit	129**	-011	003	-019	---	000	-009	-013	000
Locus Contl	112**	023	070**	-065**	0.54	003**	047**	-054**	002**
General Self	090**	005	001	005	---	000	-070**	040*	002**
Parent Inv	160**	067**	096**	-040*	1.20	005**	059**	-022	002**
Parent Aspir	193**	035*	092**	-080**	0.58	005**	063**	-066**	002**
Educ Aspir	228**	051**	110**	-082**	0.67	006**	073**	-064**	003**
Occup Aspir	129**	036*	067**	-043*	0.78	002**	053*	-036	001*
Acad Self	285**	109**	167**	-080**	1.04	013**	---	---	---
Trouble	095**	014	053**	-054**	0.49	002**	051*	-054**	002**
Social Self	294**	162**	249**	-120	1.04	030**	---	---	---
Post-secondary									
Employed	042*	-013	020	-046*	0.22	001*	009	-041*	001
University	189**	034*	091**	-078**	0.58	004**	066**	-067**	003**
Educ Aspir	216**	066**	120**	-075**	0.80	007**	096**	-064**	004**
Occup Aspir	122**	028	046*	-026	---	001	037	-021	001

* $p < .05$; ** $p < .01$.

[a] r= correlation between the total activity score and the outcome. beta = standardized beta for total activity scores in a regression equation containing the background variables and sophomore outcomes. [b] The standardized beta weights for the linear and quadratic (quad) components of the total activity scores were estimated in a regression equation containing the background variables and the sophomore outcomes. All the equations with significant nonlinear components are inverted U-shaped curves for which the maximum point is between .2 and 1.6 standard deviations above the mean of the distribution of total activity scores. [c] Senior social and academic self-concepts were considered as predictor variables instead of outcomes. [d] Variance uniquely defined by the total activity scores (see Table 5).

Table 7

Consequences of Extracurricular Participation: The Effects (standardized beta weights) of Each of the 16 Different Extracurricular Activities on the Senior and Post-secondary Outcomes After Controlling For the Set of 11 Background Variables and 15 Sophomore Outcomes (see Appendix 1 for description of variables)

	Total Activity Scores (Predictor Variables)															
Predicted Outcomes	Sport	Cheer	Drama	Music	Dance	Hobby	School Subj	Voc Educ	Youth	Church	Junior Achiv	Honor	Year-Book	Stdnt Govt	Ser-vice	Frater-ninty
Senior Year																
Acad Ability	---	---	---	---	---	---	---	-021	---	---	---	---	---	---	---	---
Grades	---	---	---	---	---	---	---	038	---	---	---	114	032	---	---	---
Honors	---	---	---	---	---	---	030	-031	---	---	035	123	---	---	---	---
Acad Track	049	---	---	---	---	---	---	-065	---	---	---	---	---	030	---	---
Homework	035	---	---	---	---	---	042	-044	---	039	---	041	---	---	021	---
Absenteeism	045	---	-032	---	---	---	---	---	---	058	---	---	---	---	---	---
Math Pattern	038	---	-029	---	-028	---	---	-055	---	---	---	063	---	---	---	---
Sci Pattern	049	---	---	---	-040	---	---	-038	---	---	---	060	---	---	---	---
Acdem Credit	044	---	---	-026	-042	---	026	-051	---	---	-033	041	---	036	---	---
Locus Contl	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
General Self	---	---	---	---	---	---	---	036	---	---	---	---	---	---	---	---
Parent Inv	036	---	---	---	---	---	---	---	---	073	---	---	---	---	---	---
Parent Aspir	030	---	032	---	---	-023	---	---	---	---	---	---	---	030	039	---
Educ Aspir	052	---	---	---	---	---	---	---	---	---	---	028	---	---	036	---
Occup Aspir	---	---	---	---	---	-035	---	---	---	---	---	---	034	031	034	---
Acad Self	057	---	---	---	---	---	---	---	---	045	---	049	---	047	---	---
Trouble	---	---	---	---	---	---	---	---	---	051	---	---	---	---	---	-040
Social Self	135	047	027	---	---	---	---	---	---	---	---	---	040	073	---	---
Post-secondary																
Unemployed	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
University	052	---	---	040	---	-041	---	---	---	---	---	038	031	---	028	---
Educ Aspir	062	---	---	027	---	---	---	---	---	---	---	---	029	031	050	---
Occup Aspir	---	---	034	---	---	---	032	---	---	---	---	---	---	---	---	---

Note. A series of multiple regressions was conducted in which each senior and post-secondary outcome was predicted with three sets of variables: (a) background variables, (b) sophomore outcomes, and (c) the set of 16 activity scores. Backwards elimination was used to eliminate all activity scores that did not contribute significantly ($p < .05$) to the prediction of the outcome. The standardized beta weights, presented without decimal points, are presented for all activity scores that were not eliminated (i.e., that contributed significantly to the prediction of an outcome in addition to the set of background variables and sophomore outcomes).

* $p < .05$; ** $p < .01$.

Table 8

Consequences of Extracurricular Participation: Interactions Between Total Activities and Selected Variables (Sex, SES, Black, Hisp, Sex, College Expectations, School Year Size, and Sophomore Academic Ability).

Outcomes	Variance Due to Interaction[a]	Background Variables Interacting Significantly With Total Activity[b]
Senior Year		
Acad Ability	001*	SES(-03)
Grades	002**	SES(-03) Sex(-03) Abil(03)
Honors	004**	Abil(03)
Acad Track	001	---
Homework	002	---
Absenteeism	002	---
Math Pattern	001	---
Sci Pattern	001	---
Acad Credit	001	---
Locus Cntl	001	---
General Self	002	---
Parent Inv	001	---
Parent Aspir	003**	SES(-03) Abil(04)
Educ Aspir	002**	SES(-04)
Occup Aspir	001	---
Acad Self	002*	SES(-03)
Trouble	001	---
Social Self	002*	SES(-04)
Post-secondary		
Employed	001	---
University	002*	SES(-05)
Educ Aspir	001	---
Occup Aspir	002	---

Note. Interaction terms were calculated by multiplying the total activity score by each of the 7 interacting variables after standardizing all 8 variables (i.e., Mn=0, SD=1). Variance due to the interactions is the additional variance that can be explained by the 7 interaction terms after controlling for the background variables, the sophomore outcomes, and the total activity score. When the set of interaction terms was statistically significant ($p<.05$) each separate interaction term that was statistically significant ($p<.05$) is shown and the standardized beta weight, presented with a decimal point, is presented in parentheses.

* $p < .05$; ** $p < .01$.

Appendix 1

Definition and Description of Variables Considered

Variables	Description
Background Variables	
Sex. [SEX]	1=Male, 2=female.
SES. [BBSES, FYSES]	Mean of 1980 and 1982 composite socioeconomic status defined by occupation status, mother's education, father's education, family income, and material possessions in the home.
Race--Black. [Race2]	Ethnicity is Black. (1=yes, 0=no)
Race--Hispanic. [Race2]	Ethnicity is Mexican, Cuban, Puerto Rican, or other Hispanic. (1=yes, 0=no)
Public School. [SCHSAMP]	Attended a public school (1=yes, 0=no)
Repeated Grade. [FY59AA-FY59AH]	Number of grades repeated in grades 1-8.
College Expectations. [BB072A, BB072B, YB068A,YB068B]	Mean of college expectations in 6th, 7th, 8th and 9th grades.
Kindergarten. [YB012]	Went to kindergarten. (1=yes, 0=no)
Urban. [HSURBAN]	High School in an Urban Setting (0=suburban or rural, 1=Urban)
Rural. [HSURBAN]	High School in an rural Setting (0=suburban or urban, 1=rural)
Mother Works. [BB037A, BB037B, BB037C]	Mean of responses asking if mother worked while respondent was in high school, in elementary school and before respondent was in elementary school. (1=did not work, 2= part time, 3= full time)
School Year Size. [SB002B, FS1]	Total membership of the school year.
Sophomore (1980) and/or Senior (1982) Outcome Variables	
Academic Ability. [YBMTH1FS, YBMTH1FS, YBREADFS, YBVOCBFS, YBSCINFS, YBWRITFS; FYMTH1FS, FYMTH1FS, FYREADFS, FYVOCBFS, FYSCINFS, FYWRITFS]	sophomore and senior ability tests were based on a composite of the same six tests in mathematics, reading, vocabulary, science, and writing after scores for each test were standardized (see Heyns & Hilton, 1982, for a review of the tests).
Grades. [BB007; FY7]	Sophomore and senior self-reported high school grades (higher scores reflect higher grades).
Honors. [BB011C, BB011D; FY9C, FY9D]	In 1980 and 1982 the mean of standardized responses to two dichotomous items asking students if they had taken honors level or advanced coursework in English and mathematics.
Academic Track [BB002; FY2]	In 1980 and 1982 participated in academic track (1=yes, 0=no)
Homework [BB015; FY15]	1980 and 1982 time per week spent on homework.
Absenteeism [BB016; FY16]	1980 and 1982 frequency absent from school but not ill (scored so that higher scores represent less absenteeism).
Math Pattern. [MATHPATN]	In 1982 the math course-taking pattern

(4=concentration, 3=college-bound, 2=general studies, 1=limited or non-participant)

Science Pattern.[a] [SCIPATN] In 1982 the science course-taking pattern (4=concentration, 3=college-bound, 2=general studies, 1=limited or non-participant)

Academic Credits.[a] [NEWBASE] In 1982 number of credits in six academic areas.

Locus of Control. [BBLOCUS, FYLOCUS] 1980 and 1982 composite locus of control (higher values reflect a more internal locus)

General Self-Concept. [BBCONCPT, FYCONCPR] 1980 and 1982 composite variables similar to Rosenberg's (1965) self-esteem scale (higher values reflect more positive scores)

Parent Involvement. [BB046A-BB046C, BB0476; FY57A-FY57C, FY60F] 1980 and 1982 means of z-score responses asking if mother and father monitor school work, parents know what I'm doing, and spend time talking to my parents (higher scores reflect greater parental involvement).

Parent Aspirations. [BB061; FY81C] 1980 and 1982 asking students to indicate the level of education that their parents want them to get.

Educational Aspirations. [BB0616, BB065, BB067; FY766, FY80, FY82] 1980 and 1982 means of z-score responses asking if disappointed if do not graduate from college, expected level of schooling and lowest level of schooling satisfied with (higher scores reflect higher educational aspirations).

Occupational Aspirations [BB062, FY] 1980 and 1982 occupational aspirations at age 30 (scaled the same way as parent's occupational status in the SES composite).

Academic Self-concept. 1980 and 1982 composite variables constructed from responses to one cluster of 8 dichotomous items that refer to attitudes toward English [YB035A-YB035D] and mathematics [YB035E-YB035H] (e.g., I dread English (mathematics) classes; English (mathematics) class does not scare me at all), and 3 items asking if respondent is interested in school [BB059C], is seen by others as a good student [YB053D], and feels he/she has the ability to complete college [BB069]. The standardized mean of the first eight items was averaged with the standardized means to the other three items in 1980. Because the first cluster of 8 items was not included on 1982 survey, only the mean of the standardized responses to the other three items was used (higher scores reflect more positive academic self-concepts).

Trouble. [YB053F, BB059B, BB059D, BB059E, BB061A; FY74F, FY66B, FY66E, FY66F, FY76A] 1980 and 1982 means of z-score responses asking if others see you as a trouble maker, if had disciplinary problems in school, if suspended from school, if cut classes, and if had serious trouble with the law. (higher values reflect more trouble).

Social Self-concept. [BB047A, BB047C, YB053A, YB053C, YB053G, BB061D; FY60A, FY60C, FY74A, FY74C, FY74G, FY76D] 1980 and 1982 means of z-score

responses asking the frequency of visiting friends and of going out on dates, whether others see you as popular, socially active, and one of the leading crowd, and whether respondent sees him/herself as popular (higher scores reflect more social self-concepts).

Post-Secondary Outcome Variables (based on 1984 data)

Unemployed [JOBSOC82, JOBSFE82, JOBSOC83, JOBSFE84] Sum of activity variables indicating student was neither employed (full or part-time) nor a student (full or part-time) at each of four points.

University [PSESOC82, PSESFE82,PSESOC83, PSESFE84] Sum of activity variables indicating student was not a student (0), was a part-time student (1), or was a full-time student (2) at a post-secondary institution at each of four points in time.

Educational Aspirations. [SY13] A single item asking for expected level of schooling (higher scores reflect higher educational aspirations).

Occupational Aspirations [SY54A] Occupational aspirations at age 30.

Note. Values in brackets refer to variable names used on the HSB data file. Those starting with BB or YB come from the 1980 (sophomore) survey, and those starting with FY come from the 1982 (senior) survey. Most outcome variables for the sophomore and senior years are paired, and unless otherwise noted, are defined with parallel variables from the two surveys. For all composite variables consisting of the mean of specific indicators, the mean of all non-missing values was computed and a missing value was assigned only if all the variables were missing.

[a] These variables are based on evaluations of actual student high school transcripts that were provide by the school and analyzed by HSB staff.